

# PELECYPODA OF THE "FLINDERSIAN" REGION, SOUTHERN AUSTRALIA.

No. 1.

By BERNARD C. COTTON, SOUTH AUSTRALIAN MUSEUM.

Figs. 1-15.

Sir Joseph Verco's extensive dredging operations in South and Western Australia provided the material upon which this, the author's first paper on the Flindersian Pelecypoda, is based.

## PROTONUCULA gen. nov.

This genus is proposed for *P. verconis* sp. nov., described below. While resembling *Pronucula* in shape, it differs in having the anterior and posterior teeth meeting below the umbo and forming one series, and no chondrophore.

## PROTONUCULA VERCONIS sp. nov.

Shell oval, thin, polished, concentrically lirate; umbos fairly prominent; the anterior and posterior teeth form an unbroken series; they attain the maximum size about the middle of the anterior set.

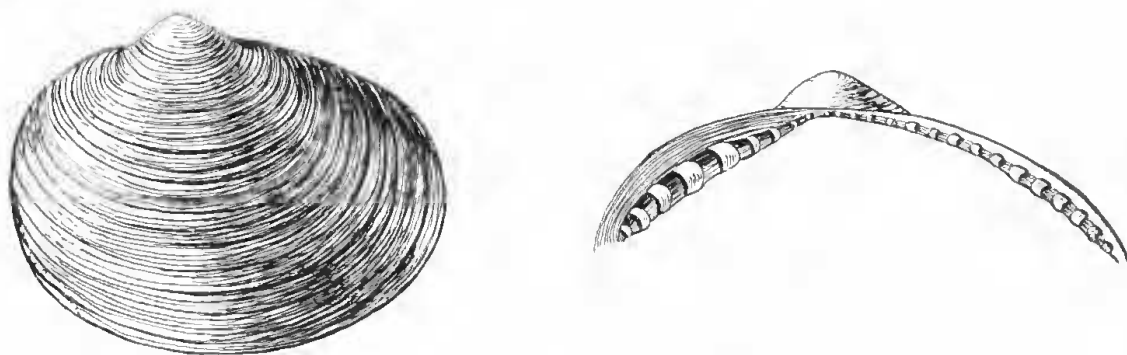


Fig. 1. *Protonucula verconis* sp. nov.

Type. 120 miles west of Eucla, 300 fathoms. 3.5 mm. x 2.7 mm. In South Australian Museum (D. 10119).

*Loc.* Cape Jaffa to 120 miles west of Eucla, 130 to 300 fathoms.

The Cape Jaffa shells were those previously incorrectly listed as *Sarcopha obolella* Tate.

## PRONUCLA CANCELLATA sp. nov.

May <sup>(1)</sup> recorded *Pronucula decorosa* Hedley from Pilot Station, but did not consider his specimens typical, and later labelled them in his private collection with a new specific name. A close examination of these specimens shows (as do May's illustrations, *loc. cit.*) that they are quite different from *P. decorosa* Hedley. They are therefore described below as a new species.

Shell obliquely oval, minute, inequilateral, umbos moderately prominent, umbonal third smooth, then concentric lirae, and radial lirae of equal validity and spacing, so as to make square spaces; ventral border distinctly denticulate internally and externally.

Type. Pilot Station, 9 fathoms (W. L. May). In South Australian Museum (D. 10114).

Loc. Pilot Station, 9 fathoms; Gulf St. Vincent to St. Francis Island, 15 to 62 fathoms.

## PRONUCLA CONCENTRICA sp. nov.

Shell obliquely oval; about forty close concentric lirae, no radials; ventral border minutely denticulate within; eight teeth on one side of the condrophore, fourteen on the other.

Type. Gulf St. Vincent, 20 fathoms. 3.8 x 3.3 mm. In South Australian Museum (D. 10115).

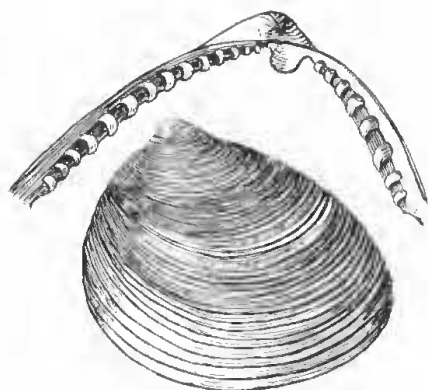


Fig. 2. *Pronucula concentrica* sp. nov.

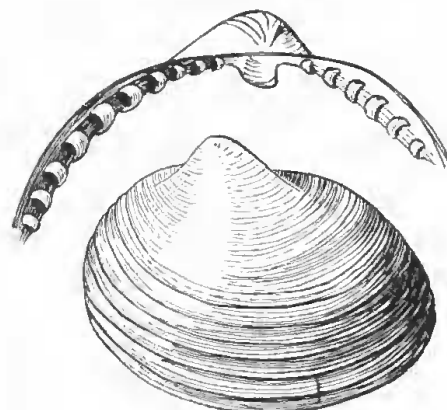


Fig. 3. *Pronucula flindersi* sp. nov.

## PRONUCLA DECOROSA Hedley.

Hedley recorded this species from Port Kembla in 1902 and from 100 fathoms off Cape Wiles in 1911. The specimens from the following localities are typical.

Loc. McDonnell Bay to 120 miles west of Encla, 6 to 300 fathoms.

(1) Proc. Roy. Soc., Tasn., p. 81, pl. 8, fig. 42, 1915.

## PRONUCULA FLINDERSI sp. nov.

Shell roundly oval, slightly oblique, median portion of the dorsal margin straight; umbos rather large and prominent; six teeth on one side of the chondrophore, ten on the other; ventral margin smooth; umbonal third of surface smooth, concentric ribs developing towards the margin, no radial sculpture.

Type. 120 miles west of Eucla, 300 fathoms. 4 mm. x 3 mm. In South Australian Museum (D. 10116).

*Diagnosis.* From *P. micans*, is more equilateral, rounder, not so long, has more prominent umbos, and fewer hinge teeth.

PRONUCULA HEDLEYI Pritchard and Gatliff (*Nucula*).

South Australian and Western Australian specimens have the inner ventral margin denticulate.

*Loc.* McDonnell Bay to 120 miles west of Eucla, 6 to 300 fathoms.

PRONUCULA MICANS Angas (*Nucula*).

*Loc.* Beachport to King George Sound, 6 to 150 fathoms.

## NUCULA BEACHPORTENSIS Vereo.

*Loc.* Beachport to 120 miles west of Eucla, 40 to 300 fathoms.

## NUCULA DILECTA Smith.

*Loc.* Port Arthur, 50 to 70 fathoms.

## NUCULA SUBDILECTA Iredale.

Apparently *N. obliqua* Lk. does not occur in South Australia; specimens so diagnosed are much less ventricose and less solid, have smaller teeth, and a more acutely angled anterior margin. These should probably be named *N. subdilecta* Iredale.

*Loc.* Beachport to 120 miles west of Eucla, 90 to 300 fathoms.

## SCAEOLEDA CRASSA PLEPIDA Iredale.

*Loc.* Beachport to St. Francis Island, 14 to 62 fathoms.

SCAEOLEDA DOIRNI Hanley (*Leda*).

South Australian deep-water specimens much more resemble Iredale's fig. 14 (?), which he says is the Peronian shallow-water form.

*Loc.* Beachport to Cape Jaffa, 100 to 150 fathoms.

(?) Iredale, Proc. Linn. Soc., N.S.W., xlix, pt. iii, p. 185, pl. 35, fig. 14, 1924.

SCAEOLEDA VERCONIS Tate (*Leda*).

*Loc.* Kingston to Fremantle, common in 10 to 20 fathoms.

TERETILEDA FORTIS Hedley (*Leda*).

The South and Western Australian shell is less solid.

*Loc.* Cape Jaffa to 120 miles west of Eucla, 130 to 300 fathoms.

## COMITILEDA CURTIOR sp. nov.

This species somewhat resembles *C. pala* Hedley, but is less solid, has a more obtuse umbonal angle, and the posterior dorsal margin slightly convex, not slightly concave, so giving it a rounder appearance. The ventral margin is smooth. A fresh specimen has the dorsal margins tinged pink colour.

*Type.* 120 miles west of Eucla, 300 fathoms. 3.2 mm. x 2.5 mm. In South Australian Museum (D. 10118).

*Loc.* 40 to 120 miles west of Eucla, 72 to 300 fathoms.

COMITILEDA MILIACEA Hedley (*Leda*).

A careful examination of South Australian specimens establishes their identity with *C. miliacea* Hedley.

*Loc.* Cape Jaffa to 120 miles west of Eucla, 300 fathoms.

## COMITILEDA REMENSA Fredale.

Fredale (3) states: "Hedley's *Leda pala* may be at present included in *Comitileda*, as the species *remensa*, the type locality being 100 fathoms, 40 miles south of Cape Wiles, South Australia, appears to have been regarded by Vereo as *pala*, from which it differs in size and shape as well as hinge formation."

Probably this means Hedley's *Leda pala* may be at present included in *Comitileda*, as also the species *remensa*, the type locality of this being 100 fathoms, 40 miles south of Cape Wiles, South Australia. This appears to have been regarded by Vereo as *pala*, from which it differs in size and shape as well as hinge formation.

The specimens recorded by Vereo from 130 fathoms, Cape Jaffa, as *Leda pala* Hedley are not that species, but *C. remensa* Fredale, as he suggests.

*Loc.* Cape Jaffa to 120 miles west of Eucla, 130 to 300 fathoms.

## POROLEDA SPATHULA Hedley.

Specimens from localities given below correspond exactly with Hedley's cotypes. They all have a slightly curved radial depression towards the short end of the shell running from the umbo to the ventral margin, which is con-

(3) Rec. Austr. Mus., xvii, No. 4, p. 159, 1929.

sequently feebly notched there. This appears to have been omitted in Hedley's picture of the type, since it is present in the cotypes.

Iredale (*loc. cit.*) introduces a new species, *P. flindersi*, "which differs from *spathula* in the presence of a fine radial sculpture." Hedley's cotypes have this fine radial sculpture, and it is also obvious in his illustration of the type.

*Loc.* Schouten Island, 40 fathoms (May); Beachport to 90 miles west of Eucla, 40 to 200 fathoms.

#### LAMELLIUEDA gen. nov.

This genus is introduced for *L. typica* sp. nov. (described below), which is nearest in shape to *Paroleda*, but differs in having both the anterior and posterior hinge teeth lamellar.

#### LAMELLIUEDA TYPICA sp. nov.

Shell thin, slightly curved, compressed, subcylindrical, very inequilateral,umbo small, distinct, post-dorsal border very slightly concave, anterior border sharply rounded; ventral border gently convex, nearly parallel with the dorsal, rising gradually behind; posterior end roundly truncate; fine accremental striae, no radials; teeth laminate and imbricate, both anterior and posterior, five in front, ten behind; cartilage groove narrow, elongate, running backwards from the umbo; light horn coloured, smooth, and glistening. Largest specimen 15 mm. x 4 mm.

*Type.* 120 miles west of Eucla, 300 fathoms. 11.2 mm. x 3.2 mm. In South Australian Museum (D. 10117).



Fig. 4. *Lamellileda typica* sp. nov.

#### OVALEDA TELLINAEFORMIS Hedley (*Sarepta* ?).

One left valve, 10.4 mm. x 7.8 mm., typical.

*Loc.* Beachport, 200 fathoms.

#### AUSTROSAREPTA RUBRICATA Tate (*Limopsis*).

*Loc.* Beachport to 120 miles west of Eucla, 17 to 150 fathoms.

#### AUSTROSAREPTA RHOMBOIDALIS Verco (*Lissarca*).

*Loc.* Port Phillip to Cape Jaffa, 7 to 300 fathoms.

## MICROCUCULLAEA ADELAIDEANA Iredale.

*Loc.* Cape Jaffa to 120 miles west of Eucla, 50 to 300 fathoms.

## PLEURODON MAORIANUS Hedley.

*Loc.* Cape Wiles, 100 fathoms; and 120 miles west of Eucla, 300 fathoms.

## BARBATIA PISTACIHA Lamarek.

No species of true *Arca* occur in South Australia, and only two species of *Barbatia*.

*Loc.* Beachport to Geraldton (W.A.), 7 to 200 fathoms.

## BARBATIA LAMINATA Angas.

*Loc.* Beachport to Rottnest, down to 150 fathoms.

BARBATIA FUSCA Bruguiere (*Arca*).

*Loc.* Shark Bay, Northern Territory, Townsville.

BARBATIA VIRESCENS Reeve (*Arca*).

North West Australian specimens agree with Reeve's description and picture.

*Loc.* Shark Bay and Broome.

## ARCA SOLIDA Sowerby.

Specimens from the following localities appear to be this species. Those from Moreton Bay are most ventricose, those from Burleigh Heads least.

*Loc.* Shark Bay (5 specimens), Moreton Bay (5 specimens), Burleigh Heads (7 specimens).

## ARCA NAVICULARIS Bruguiere.

Two authors recorded this species from South Australia. No specimen from this State is in this Museum, nor did Sir Joseph Verco take it on any beach, or during his dredging operations as far west as Fremantle. It does not appear indigenous to South Australia.

ANADARA TRAPEZIA Deshayes (*Arca*).

The South Australian subfossil appears to be the same species as the living Peronian shell, and has probably become extinct owing to climatic changes. It is common on the raised beaches of South Australia. At Moana Beach single worn valves may be found at the water's edge, and may easily be mistaken for recent shells.

*Loc.* Aldinga Bay; Victor Harbour; Moana Beach; Outer Harbour, in mud dredged from the Port River; Ardrossan; Cape Thevenard; Streaky Bay; Denial Bay; Murat Bay.

Largest specimen, 83 mm. x 60 mm., Streaky Bay.

*GLYCYMERIS STRIATULARIS* Lamarek (*Pectunculus*).

*Loc.* Beachport to Rottnest, down to 28 fathoms.

*GLYCYMERIS STRIATULARIS PENELEVIS* subsp. nov.

Shell ovate, slightly inequilateral, rounded anteriorly and posteriorly; postero-dorsal and antero-dorsal margins almost straight; ventral convex; area in each valve 20 mm. long and 2.4 mm. wide; nine anterior teeth and eleven posterior; sculpture, very fine radial riblets, only visible under the lens, too numerous to count, obsolete within; ventral margin internally denticulate; surface externally cream coloured, faintly marked with fine, zigzag, brownish-red lines about the umbo; internally white; epidermis velvet-like, hairy towards the margin.

Type. 45 mm. x 37.2 mm., joined valves 21 mm. wide, 12 fathoms, Gulf St. Vincent. In South Australian Museum (D. 10100).

*Diagnosis.* Differs from *G. striatularis* in being much more compressed and having a thinner shell and finer sculpture.

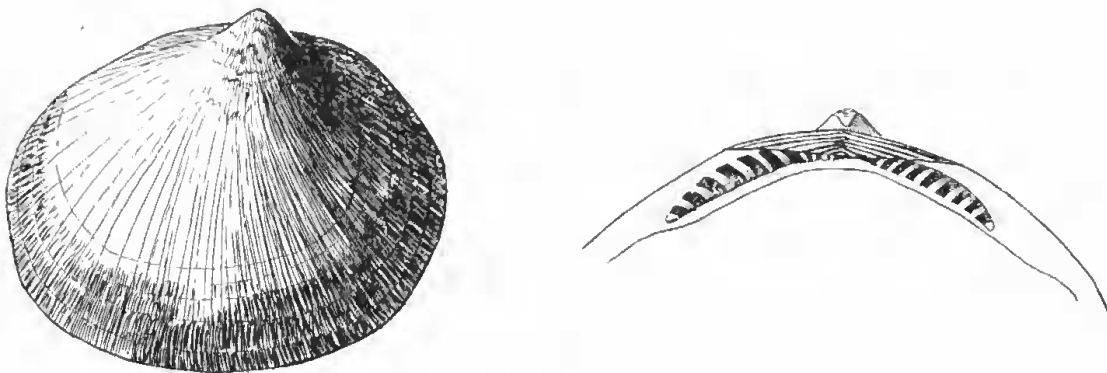


Fig. 5. *Glycymeris striatularis penelevis* subsp. nov.

*GLYCYMERIS SORDIDUS* Tate (*Pectunculus*).

*Loc.* Rapid Head to St. Francis Island, 9 to 22 fathoms.

*GLYCYMERIS INSIGNIS* Pilsbry.

This is closely related to *G. sordidus* Tate, but differs in being smaller, more solid, more ventricose, and having more valid, fewer, concentric rest steps, the posterior-dorsal margin straighter, a more acute postero-ventral angle.

*Loc.* King George Sound, 35 fathoms; and Bunbury, 15 fathoms.

GLYCYMERIS FLABELLATUS Ten.-Woods (*Pectunculus*).

Iredale introduced a new South Australian species *Glycymeris broadfooti*, without an illustration. Careful examination of a large number of specimens of all ages reveals that his description corresponds exactly with the characters of adult forms of *G. flabellatus*.

*Loc.* Beachport to 120 miles west of Eucla, 8 to 150 fathoms.

GLYCYMERIS RADIANS Lamarek (*Pectunculus*.)

*Loc.* Cape Jaffa to Albany, 6 to 27 fathoms.

## GLYCYMERIS GRAYANUS Dunker.

Only two worn odd valves found at Wallaroo by Dr. Gosse. Almost certainly came in ship's ballast.

*Loc.* McDonnell Bay to St. Francis Island, down to 30 fathoms.

## ASPALIMA ERECTUS IDONEA Iredale.

*Loc.* Beachport to 35 miles south-west of Neptune islands, 104 to 300 fathoms.

## LIMOPSIS EUCOSMIUS Vereo.

A specimen from 100 fathoms 120 miles west of Eucla measures 17.6 mm. x 16.5 mm.

*Loc.* Beachport to 120 miles west of Eucla, 40 to 300 fathoms.

## LIMOPSIS VIXORNATA Vereo.

*Loc.* Beachport to St. Francis Island, 45 to 110 fathoms.

## LIMOPSIS VIXORNATA OCCIDENTALIS subsp. nov.

Differs from *L. vixornata* Vereo in being higher than long and more triangular.

Type. Bunbury, 22 fathoms. 11 mm. x 11.5 mm. In South Australian Museum (D. 10123).

## LIMOPSIS PENELEVIS Vereo.

The type locality is Beachport, 150 fathoms.

*Loc.* Beachport to 120 miles west of Eucla, 90 to 300 fathoms.

## LIMOPSIS TENISONI Ten. Woods.

*Loc.* Backstairs Passage to 90 miles west of Eucla, 10 to 130 fathoms.



*LIMOPSIS TENISONI FORTERADIATUS* subsp. nov.

Differs from *L. tenisoni* in being more triangular and comparatively higher, having fewer and stouter radials, and more numerous hinge teeth.

Type. Port Adelaide. 21.5 mm. x 22 mm. In the South Australian Museum (D. 10125).

*Loc.* Gulf St. Vincent to Fremantle, down to 35 fathoms.

*LIMOPSIS TENISONI TENUIRADIATUS* subsp. nov.

Differs from *L. tenisoni* in being more oblique, having finer, more numerous radials, and fewer hinge teeth.

Type. Encounter Bay. 27 mm. x 22.5 mm. In South Australian Museum (D. 10126).

*Loc.* McDonnell Bay to King George Sound, down to 81 fathoms.

*CYRILLISTA CONCENTRICA* Vereo (*Sarepta*).

This should be placed in the Family *Limopsidae*.

*Loc.* Cape Jaffa to 120 miles west of Eucla, 17 to 150 fathoms.

*ATRINA TASMANICA* Ten. Woods.

A perfect specimen from Spencer Gulf measures 230 mm. x 135 mm. The South Australian shell is not separable from the Tasmanian, therefore Hedley's variety *dumosa* is a synonym.

*Loc.* South Australia as far west as Murat Bay, down to 15 fathoms.

*PINNA DOLABRATA* Lamarek.

Unworn juvenile specimens have closely scaled radial ribs and faint rusty-coloured rays, which suggests that *Pinna virgata* Menke is a synonym. The scales are often completely eroded in the adult, though sometimes quite marked at the border. A specimen from Gulf St. Vincent measures 15 inches long.

*Loc.* South and Western Australia.

*ISOGNOMON SPATHULATA* Reeve.

A single living specimen from St. Francis Island appears to be this species.

*MELEAGRINA MARGARITIFERA* Linnaeus (*Mytilus*).

No recent species of the genus *Meleagrina* is known to occur in South Australia. Probably Tate's record was based on the subfossil shell which is occasionally found.

ELECTROMA GEORGIANA Quoy and Gaimard (*Aricula*).

Very variable in colour and shape.

*Loc.* South Australia to Fremantle, down to 104 fathoms.

ELECTROMA PUNCTULATA Reeve (*Aricula*).

This species was wrongly identified by Tate as *Pteria zebra* Reeve. It differs from *Electroma georgiana* Reeve in being smaller, more globose, and thicker.

*Loc.* Royston Head, Aldinga, and Fowler's Bay.

## MALLEUS MERIDIANUS sp. nov.

Lamarek named the following species of *Mallcus* from Australia: *Mallcus albus*, *vulgaris* and variety (b), *normalis* varieties (a) and (b), *reticulatus*, and *decurtatus*. According to Chenu's illustrations, *M. albus* is the Queensland species, with a long body regularly validly undulate at the margins, and is therefore not applicable to the South Australian shell, neither are *M. vulgaris*, *normalis* variety (a), and *decurtatus*, which are very darkly coloured. Both *vulgaris* variety (b) and *normalis* variety (b) agree with South Australian shells. However, *M. vulgaris* variety (b) is obviously a distinct species from *M. vulgaris*, as is *M. normalis* variety (b) from *M. normalis*. Therefore, the South Australian shell being unnamed, *Mallcus meridianus* is proposed for it.

*Loc.* South Australia, Albany, Fremantle, and Shark Bay.

NOTOVOLA ALBA Tate (*Pecten*).

In South Australian and Victorian specimens, large and small, the radial ribs on the convex valve are usually quite smooth; never deeply grooved as in some specimens from Albany. Largest specimen 14.5 mm. x 13.0 mm. from Tasmania.

*Loc.* Port Phillip to Albany, 7 to 40 fathoms.

MIMACHILAMYS ASPERRIMUS Lamarek (*Pecten*).

Very variable in colour and sculpture. Largest specimen 9.1 mm. x 97.5 mm. from Western Australia.

*Loc.* Beachport to Albany, 6 to 55 fathoms.

MIMACHILAMYS AUSTRALIS Sowerby (*Pecten*).

Sowerby described it from Swan River. It is probably a distinct species, and not a synonym for *P. asperimus* Lk., which also occurs in Western Australia. *M. australis* Sby. has more prominent, closely packed scales on the ribs and anricles; the ribs are fewer and the shell more equilateral. Largest specimen 65 mm. x 65 mm. from Albany.

*Loc.* Albany, King George Sound, 10 to 28 fathoms.

## MIMACHILAMYS (TALACHILAMYS) FAMIGERATOR Iredale.

Hitherto this has not been definitely recorded from the Flindersian region, but specimens from numerous localities therein have been taken by Dr. Vereo.

*Loc.* Beachport to Albany, 40 to 200 fathoms.

## MIMACHILAMYS (VEPRICHILAMYS) PERILLUSTRIS Iredale.

Dr. Vereo dredged six valves in South Australian waters.

*Loc.* Beachport, 200 fathoms; Cape Jaffa, 130 to 300 fathoms.

SCALOCCHILAMYS (BELCHILAMYS) AKTINOS Petterd (*Chlamys*).

Though superficially resembling *M. asperrimus* Lk., it may readily be distinguished by the very small posterior auricle and fine shagreen sculpture.

*Loc.* Port Phillip to Albany, 13 to 35 fathoms (Dr. Vereo).

EQUICHILAMYS BIERONS Lamarek (*Peecten*).

This is found in South Australia and Tasmania, and is recorded by Hedley from New South Wales, between Green Cape and Gabo Island. It is not recorded from Victoria or Western Australia. A subfossil from Murat Bay agrees with the recent shell. Largest specimen 135 mm. x 125 mm., Derwent Estuary, Tasmania.

*Loc.* Beachport to St. Francis Island, living in 4 to 20 fathoms, dead at 35 fathoms; Murat Bay, subfossil.

## NOTOCHILAMYS gen. nov.

This genus is proposed for *Chlamys anguineus* Finlay = *P. undulatus* Sowerby. The radial sculpture of the two valves is dissimilar; the primary radials few (six or seven).

Differs from *Equichlamys* in having very unequal auricles, and from *Mesopeptum* in having the surface covered with fine shagreen sculpture and not concentric threads.

## NOTOCHILAMYS ANGUINEUS Finlay.

Rare in South Australia, much more common in Western Australia. When adult the ventral margin of the left valve is curved towards the right valve. Size, 39 mm. x 38 mm.

*Loc.* Beachport, 40 fathoms; and Yorke Peninsula, Hopetoun, Albany, Bunbury, and Fremantle, 15 to 35 fathoms.

NOTOCHLAMYS TASMANICUS Ads and Angas (*Pecten*).

When adult it is larger than *M. anguineus*, and the ventral margin of the left valve is not curved towards the right valve as in adult specimens of that species. Size, 62 mm. x 62 mm.

*Loc.* Beachport to Corney Point, 12 to 40 fathoms.

## MESOPEPLUM CAROLI Iredale.

Iredale described this species from "40 to 80 fathoms off the New South Wales coast." In juvenile and unrubbed adult specimens from the Flindersian region the concentric threads are plainly visible in both valves, over both the interspaces and the radial ribs. In rubbed specimens the threads may be absent from the prominent ribs in the middle of the shell, while visible on the ribs near the sides. Flindersian specimens closely resemble the Peronian (according to Iredale's description and illustrations), as is frequently the case with deep water shells.

*Loc.* Beachport, 40 fathoms; from 40 to 120 miles west of Encla in 72 to 140 fathoms. (Dredged by Dr. Verco, 1912.)

## CHLAMYS PULLEINEANUS Tate.

Only one specimen, the type of this shell (a right valve), has ever been found. It is questionably an Australian shell, and is therefore omitted from the South Australian fauna.

CTENAMUSIUM THETIDIS Hedley (*Amusium*).

*Loc.* Beachport to Rottnest, 72 to 300 fathoms.

CHLAMYDELLA FAVA Hedley (*Cyclopecten*).

Hedley's *Cyclopecten fava* and *obliquus* appear to be the same species. Co-types of the two species examined in conjunction with a large series from South and Western Australia show intergradation.

Left valves show gradual transition from no concentric lamellae to numerous. The stippling in the right valve is probably the typical condition, its absence accidental.

Adult specimens have the ventral margin of the right valve turned abruptly backwards at an obtuse angle following the curve of the left valve. This is absent from juvenile specimens, and hence does not appear in Hedley's figure, but is apparent in New South Wales specimens sent by Hedley.

*Loc.* Beachport to King George Sound, 40 to 150 fathoms.

*CUSPIDARIA LEVIFRONS* sp. nov.

Shell small, thin, subtrapezoidal, inflated, umbos fairly prominent, approximate; anterior margin rounded, posterior rostrate, gaping; dorsal margin slightly concave, ventral convex; posterior half with thirteen radial ribs, anterior smooth; accremental striae very fine; left valve clasping right postero-ventrally, and with slightly stronger sculpture. Hinge as in *C. pinna* Vereo; white, translucent.

Type. 7.5 mm. x 5.3 mm., joined valves 4 mm. wide. 300 fathoms, 120 miles west of Eucla. In South Australian Museum (D. 10101).

Largest specimen, one left valve, 10.5 mm. long, 7 mm. high.

*Diagnosis.* Resembles *C. pinna* Vereo, but differs in having the anterior half smooth (whence the name) and absence of the very large radials.

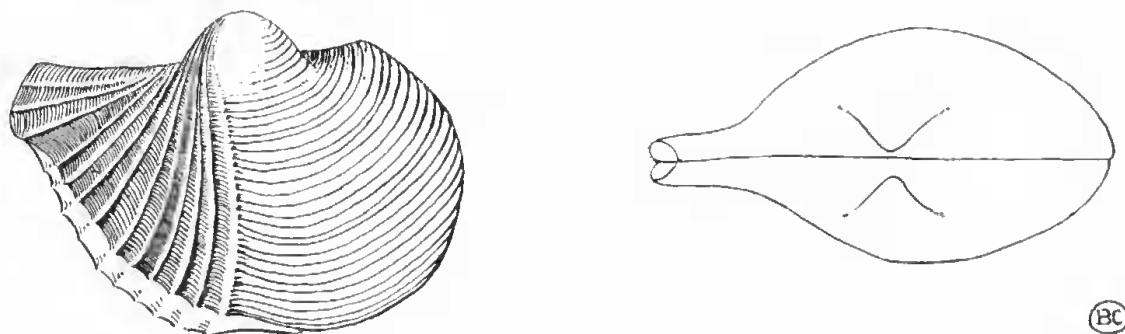


Fig. 6. *Cuspidaria levifrons* sp. nov.

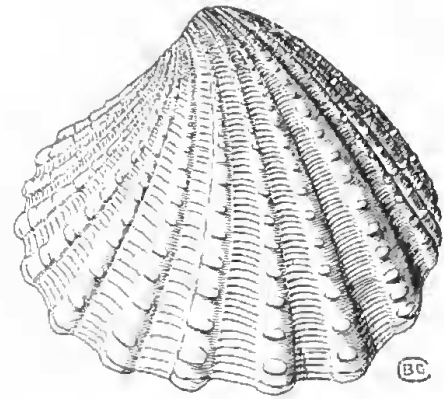
*CUNA SUBROTUNDA* sp. nov.

Shell suborbicular, slightly emcate, antero-lateral margin convex, postero-lateral slightly concave near the umbo; ventral convex, smooth except for very numerous, fine, concentric striae; white.

Type. 3.3 mm. x 3.2 mm. Spencer Gulf. In South Australian Museum (D. 10111).

*Loc.* Bimbury; Rottnest; N.W. of Cape Borda, 62 fathoms; Spencer Gulf; and Gulf St. Vincent.

*Diagnosis.* The suborbicular shape readily distinguishes this species. Sir Joseph Vereo dredged over two hundred specimens of this shell in the Flindersian region, so that it is apparently common.

Fig. 7. *Cuna subrotunda* sp. nov.Fig. 8. *Venericardia propulsea* sp. nov.*CARDITA GEMULIFERA* Tate.

Described from a unique specimen. Sir Joseph Verco (<sup>1</sup>) stated, "*Cardita gemulifera* Tate . . . is only a mild variant of the above (i.e., *Venericardia amabilis* Deshayes)," and again in his manuscript notes, "I do not think this is a distinct species—it is scarcely a variety." An examination of Tate's type satisfies me that this is *Venericardia amabilis* Deshayes.

*CARDITA GROVI* Deshayes.

This species apparently does not occur in South Australia. Our shells identified as this species are *Cardita rosulenta* Tate, which is a *Venericardia*.

*VENERICARDIA PROPELSEA* sp. nov.

Shell obliquely ovate, umbo turned anteriorly, postero-dorsal margin convex, antero-dorsal margin concave near the umbo, then becoming convex as it forms the anterior margin; sculpture of fifteen radial ribs, about as wide as the interstitial furrows, and beset with nodulose scales.

Type. 10 mm. x 10.1 mm. 14 fathoms, off Ardrossan. In South Australian Museum (D. 10106).

*Diagnosis.* Differs from the New Zealand *Venericardia lutea* Hutton (under which name it was recorded from South Australia) in having sculpture not so close, the postero-dorsal border much more convex, and the antero-dorsal border concave near the umbo, then becoming convex; not continuously slightly concave as in *V. lutea* Hutton.

*CONDYLOCARDIA CRASSIDENTATA* sp. nov.

Shell subtriangular, oblique, very inequilateral, umbos small; hinge plate (fig. 9) umbo-ventral depth about one-third of length, posterior cardinal tooth

(<sup>1</sup>) Trans. Roy. Soc., S. Austr., xxxii, p. 349, 1908.

thick, prominent, wedge-shaped, surface grooved near the inner margin, anterior cardinal long, narrow; sculpture of eighteen indistinct, scarcely prominent radials, crossed by four marked growth undulations; white.

Type. 8 mm. x 8 mm. Beachport, 40 fathoms. In South Australian Museum (D. 10110).

Loc. Beachport, 40 and 49 fathoms; Cape Borda, 62 fathoms; Cape Jaffa, 130 fathoms.

Diagnosis. *C. Compressa* Bernard is more oblique, has fewer radial ribs, the hinge plate umbo-ventrally deeper, teeth larger.

This species was recorded from South Australia by Vereo as *C. compressa* Bernard.

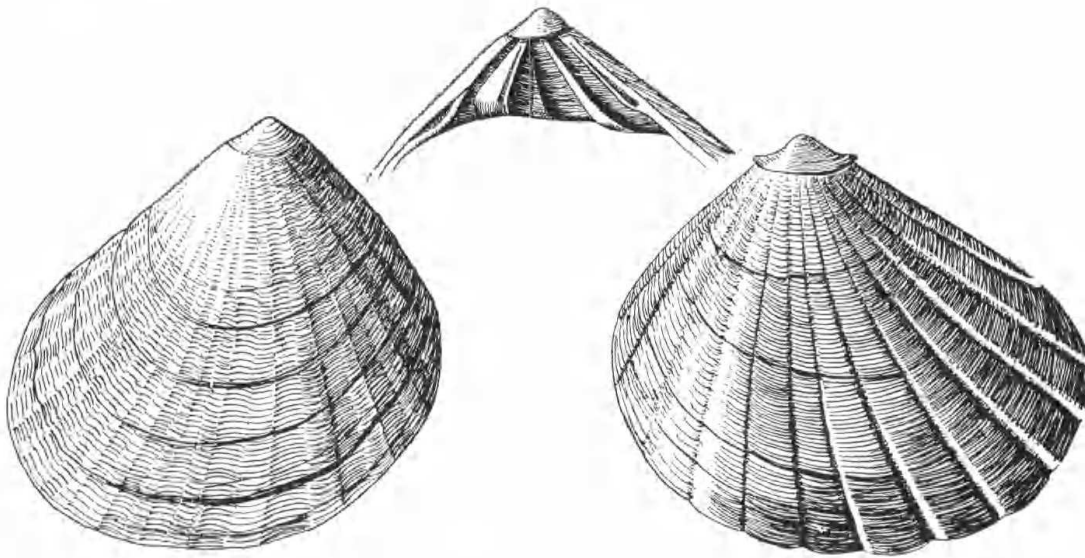


Fig. 9.

*Condylocardia crassidentata* sp. nov. and hinge.

Fig. 10.

*Condylocardia rectangularis* sp. nov.

#### CONDYLOCARDIA RECTANGULARIS sp. nov.

Shell triangularly ovate, inequilateral, postero- and antero-dorsal margins almost straight, forming a rectangle; posterior margin convex, sharply curved, anterior more widely curved; prodissoconech smooth; sculpture of fourteen flatly rounded radial ribs, crossed by fine accremental striae; interstices very narrow, almost linear; white.

Type. 2 mm. x 1.7 mm. Beachport, 40 fathoms. In South Australian Museum (D. 10113).

Loc. Guichen Bay; Gulf St. Vincent; Beachport, 40, 130, 150, 200 fathoms; Cape Jaffa, 90, 130 fathoms.

Diagnosis. From *C. porrecta* Hedley by the almost straight postero- and

antero-dorsal margins forming a rectangle; the apical angle in *C. porrecta* is more obtuse.

The type is from shells misidentified as *C. porrecta*, which apparently does not occur in South Australia.

*CONDYLOCARDIA ISOSECELES* sp. nov.

Shell minute, thin, sub-equilateral; prodissoconch strongly concentrically ribbed, validly defined from the rest of the shell, which is smooth, except for very faint accremental striae.

Type. 1 mm. x 0.83 mm. Backstairs Passage. In South Australian Museum (D. 10108).

*Loc.* Backstairs Passage; Gulf St. Vincent; St. Francis Island, 35 fathoms; Sceales Bay; Cape Jaffa, 49 fathoms; Beachport, 40 fathoms.

*Diagnosis.* The strongly sculptured prodissoconch and lack of sculpture on the rest of the shell distinguish it from any known species of the genus.

This shell was misidentified as *C. trifoliata* Hedley, which has not been found in South Australia.

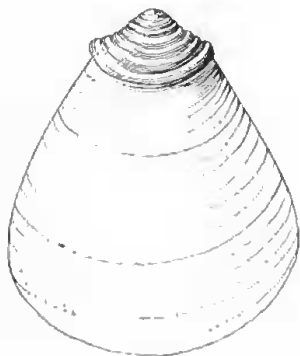


Fig. 11.

*Condylocardia isosecles* sp. nov.

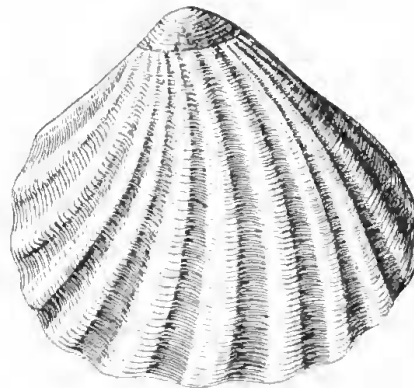


Fig. 13.

*C. notaustralis* sp. nov.

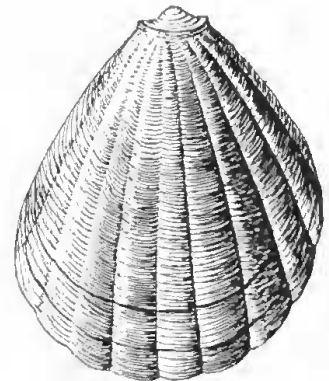


Fig. 12.

*C. lineariformis*.

*CONDYLOCARDIA LINEAEFORMIS* sp. nov.

Shell minute, triangularly ovate, oblique, obese, antero-dorsal and postero-dorsal margins slightly convex; apical angle about  $70^\circ$ ; prodissoconch minute, smooth; sculpture of eleven, flatly convex radials, crossed by accremental striae; interstices linear; white.

Type. 1 mm. x 1.15 mm. Cape Borda, 62 fathoms. In South Australian Museum (D. 10112).

*Loc.* One valve, the type, from above locality, and numerous specimens without locality from Kenyon Collection.



*Diagnosis.* A rather distinct species, much more acutely angled at the umbo than *C. rectangularis*.

CONDYLOCARDIA NOTOAUSTRALIS sp. nov.

Shell obliquely ovate, thin, umbonal area projecting; prodissoconch indistinct; sculpture of thirteen flatly convex radial ribs and nearly equally wide interstices; crossed by accremental striae; margin slightly dentate; yellow.

Type. 1.5 mm. x 1.4 mm. Beachport, 200 fathoms. In South Australian Museum (D. 10109).

*Loc.* Gulf St. Vincent; Spencer Gulf; Gnichen Bay; Beachport, 150 and 200 fathoms; Backstairs Passage; Geographe Strait (May).

*Diagnosis.* From *C. australis* Bernard by its more projecting umbonal area, fewer ribs, with nearly equal interstices.

This species was wrongly identified as *C. australis* Bernard.

CONDYLOCARDIA SUBRADIATA Tate (*Carditella*).

Specimens dredged in 50 to 120 fathoms west of Eucla and in 72 fathoms 40 miles west of Eucla by Sir Joseph Verco add another species and genus to the Western Australian list.

AUSTROTURQUETIA gen. nov.

This is proposed for *Turquetia integra* Hedley, which differs from *Turquetia fragilis* Velain, the type of *Turquetia*, in being equilateral, having a median umbo-ventral sulcus externally, and lacking the short, truncate posterior side and the concave posterior margin.

AUSTROTURQUETIA INTEGRAL Hedley (*Turquetia*).

*Loc.* Cape Jaffa, 130 fathoms, one left valve, 6 mm. x 3.7 mm.

CORBULA IREDALEI sp. nov.

Triangularly ovate, very inequivalve, inequilateral, rounded anteriorly, angled posteriorly, ventral margin convex; a ridge runs from the umbo to the postero-ventral angle of each valve; right valve the larger overlapping the left ventrally and projecting beyond it posteriorly; coarsely, concentrically, widely grooved; left finely concentrically striated; hinge tooth of right valve and corresponding socket and cartilage process of left valve strongly developed; shell white, epidermis thick, brown.

Type. 21 mm. x 15.5 mm., joined valves 10.6 mm. 20 fathoms, off St. Francis Island, South Australia. In South Australian Museum (D. 10102).

*Diagnosis.* Hitherto known under the name of the exotic shell *C. tunicala*

Hinds, from which it may be distinguished by its comparatively greater height, coarser sculpture and greater overlapping of the right valve posteriorly.

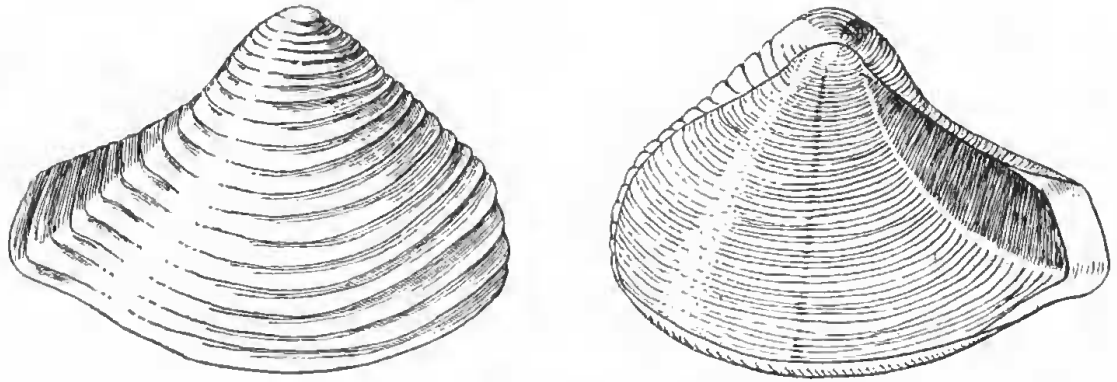


Fig. 14. *Corbula tredalci* sp. nov.

*CORBULA FLINDERSI* sp. nov.

Triangularly ovate; slightly inequivalve; rounded anteriorly, angled posteriorly; ventral margin convex throughout; a ridge runs from the umbo to the postero-ventral angle of each valve; right valve larger, overlapping left ventrally and posteriorly; both similarly sculptured with fine, regular, concentric grooves and very fine radial threads; dull white; epidermis yellowish-brown.

Type. 17 mm. x 10 mm., joined valves 8.8 mm. wide. 17 fathoms, Yankalilla Bay. In South Australian Museum (D. 10103).

*Diagnosis.* The finer sculpture, wholly convex ventral margin, and narrower posterior end separate this species from the exotic *C. scaphoides* Hinds, under which name the South Australian species has hitherto been known.

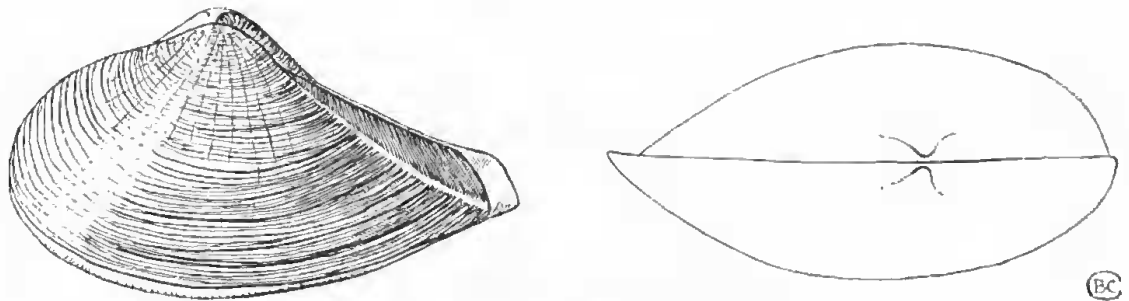


Fig. 15. *Corbula flindersi* sp. nov.

*CORBULA VERCONIS* Finlay.

Finlay (5) pointed out that the name *Corbula compressa* Vero (6) would have to be changed, having been twice used previously, so he introduced the above.

An examination of Tate's specimens shows that the recent shells recorded as *C. piriulata* Tate, a fossil species, are referable to *C. verconis* Finlay.

(5) Trans. N.Z. Inst., 57, p. 531, 1927.

(6) Trans. Roy. Soc., S. Austr., xx, p. 230, pl. 8, fig. 2, 1896.